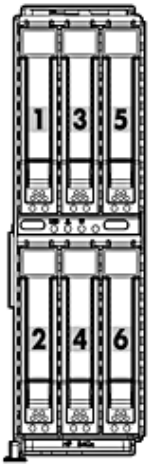
Overview

The HP StorageWorks SB40c is a half-height c-Class storage blade supporting up to six hot-plug Small Form Factor (SFF) Serial Attached SCSI (SAS) or Serial ATA (SATA) hard disk drives. Using the onboard Smart Array P400, the SB40c provides industry-leading performance, availability, and storage density, to meet customers' demanding and growing storage needs. The SB40c supports direct attach storage to HP BladeSystem c-Class Servers.



1. Hard Drive Bay 1
2. Hard Drive Bay 2
3. Hard Drive Bay 3
4. Hard Drive Bay 4
5. Hard Drive Bay 5
6. Hard Drive Bay 6

What's New

- Support for HP BladeSystem c3000 Enclosure
- Support for 36GB and 72GB, 15K rpm, SFF Serial Attached SCSI (SAS) Hard Drives

At A Glance

- **Storage Controller:**
  - Smart Array P400 RAID controller with 256MB cache, supports RAID 0/1/5/6 (ADG).
- **Internal Drive Support:**
  - Supports up to six (6) SAS or SATA hot plug hard disk drives
  - Allows for the mix of SAS and SATA drives in the same enclosure at the same time
- **Form Factor:**
  - 4U c-Class storage blade
- **Warranty:**
  - Protected by HP Services and a worldwide network of HP Authorized Channel Partners. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply. SATA hard drives have a one year warranty

Models

The SB40c allows for the mix of SAS and SATA drives in the same enclosure at the same time and is tailored to the needs of HP server blade customers who require optimized direct attach storage.

HP StorageWorks SB40c storage blade	411243-B21

Product Highlights

Key Features

Features of the SB40c include:

SFF (SAS/SATA) support - Delivering data transfer rates up 3Gb/s for SAS and 1.5Gb/s for SATA

- Support for up to six (6) SFF SAS or SATA drives provides up to 876GB of storage capacity in a half-height blade.
- Simple configuration and setup with HP's Array Configuration Utility (ACU)
- Easy to maintain and troubleshoot with industry standard management tools including HP System Insight Manager
- Universal SFF SAS drive carrier - provides better cooling and reliability for by providing increased air flow through the storage unit.
- Hot pluggable disk drives, fans and power supplies.
- Field replaceable fans, I/O Module and mid plane

Mix and Match of Hard Drive Types

A benefit of SAS and SATA is the use of a common physical connection which allows for both drive types to be mixed together on the same backplane. This common backplane allows customers the choice of using SAS and/or SATA and helps deliver HP's message of industry leading innovation, reliability, adaptability, and performance by allowing customers to choose the reliability of SAS or the lower cost of SATA for tiered storage.

Hot Pluggable

Hot pluggable technology is designed into drives, fans and redundant power supplies. Hot pluggable components can be replaced without powering down the storage system or stopping I/O operations. This feature significantly enhances data availability.

Universal Hard Drive

Form factor is for use across multiple HP ProLiant servers, disk enclosures and storage systems. With compatibility across many enterprise platforms, you are free to deploy and re-deploy these drives to quickly deliver increased storage capacity, migrate data between systems, and easily manage spare drives.

LED Indicators

Front panel LEDs indicate drive activity and system health status.

Density

The SB40c fits into a half height bay on the BladeSystem c3000 and c7000 Enclosure.

Fault Tolerance

Using the internal Smart Array P400 controller with 256MB DDR2 BBWC, the SB40c can be configured for RAID levels 0, 1, 1 + 0, 5, and 6 (RAID ADG)

Manageability

All Smart Array products utilize a standard set of management and utility software. These tools minimize Total Cost of Ownership (TCO) by reducing training requirements and technical expertise necessary to install and maintain the HP server storage.

Product Highlights

Fault Prevention

The following features offer detection of possible failures before they occur, allowing preventive action to be taken:

- S.M.A.R.T.: Self Monitoring Analysis and Reporting Technology first developed at HP detects possible hard disk failure before it occurs, allowing replacement of the component before failure occurs.
- Drive Parameter Tracking monitors drive operational parameters, predicting failure and notifying the administrator.
- Dynamic Sector Repairing continually performs background surface scans on the hard disk drives during inactive periods and automatically remaps bad sectors, ensuring data integrity.
- Smart Array Cache Tracking monitors integrity of controller cache, allowing pre-failure preventative maintenance.
- Environment Tracking for External Storage System: Monitors fan speed and cabinet temperature of ProLiant Storage System and newer HP storage enclosures.

Compatibility and Integration Testing

Intensive compatibility and performance testing with HP BladeSystem c-Class server blades for the highest level of integration available in the industry.

Product Kit Contents

5 drive blanks, warranty card, mounting hardware, Enclosure user guide, HP SmartStart CD Kit, documentation CD

Operating Systems

Microsoft Windows Server 2003, Standard Edition
Microsoft Windows Server 2003 R2, Standard Edition
Microsoft Windows Server 2003, Standard x64 Edition
Microsoft Windows Server 2003 R2, Standard x64 Edition
Microsoft Windows Server 2003, Web Edition
Microsoft Windows Server 2003 R2, Web Edition
Microsoft Windows Server 2003, Enterprise Edition
Microsoft Windows Server 2003 R2, Enterprise Edition
Microsoft Windows Server 2003, Enterprise x64 Edition
Microsoft Windows Server 2003 R2, Enterprise x64 Edition
Red Hat Enterprise Linux
SUSE LINUX Enterprise Server
Netware 6.5 (BL460c only)
VMware ESX Server 3.0
Solaris 10 32-bit
Solaris 10 64-bit

NOTE: For more Linux OS support & certification information, please visit our the ProLiant & Bladesystem Server Linux matrix
http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html

Product Highlights

Software Suite

Systems Insight Manager

- Powerful server and server options/storage manager tool
- Monitors over 1,200 system wide parameters
- Configuration/Diagnostic Utilities

HP Array Configuration Utility (ACU)

- Powerful Web based configuration utility for all Smart Array controllers
- Provides a graphical view of HP drive array configurations
- Allows for management of multiple arrays over a secure internet connection from anywhere in the world
- Easy to use Wizards for configuration
- Runs offline for all supported Operating Systems and runs online for Windows and Linux. For online configuration of NetWare, use CPQONLIN

HP Option ROM Configuration for Arrays (ORCA)

- A simple method for managing logical drives during system power up by pressing F8 during POST
- Allows the ability to create arrays, logical drives, and assign an online spare drive
- Allows the ability to view and delete logical drives
- Allows the ability to select the boot controller
- or advanced array configurations use ACU

HP Array Diagnostic Utility (ADU)

- In depth diagnostic and reporting utility for all Smart Array controllers
- Runs offline for all supported Operating Systems, and runs online for Windows and Linux

Service and Support, HP Care Pack, and Warranty Information

Warranty

Protected by HP Services and a worldwide network of HP Authorized Channel Partners. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply.

Hard drive Pre-Failure Warranty: When used with any one of the Smart Array Family controllers and monitored under HP Systems Insight Manager (v4.20 or later), HP hard drives are supported by a Pre-Failure (replacement) Warranty. SATA hard drives have a one year warranty.

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

HP services provide total care and support expertise with committed response designed to meet your IT and business needs.

To fully capitalize on your HP BladeSystem servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a HP BadeSystem server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - simplify ProLiant solution implementation, maintenance, and management.

- **Support** - 3-Year, 24x7, Same Business Day, 4-Hour response coverage
- **Deployment Service** - Installation and Start Up for HP BladeSystem Infrastructure

Enhanced Service - optimize service level to increase IT performance and availability.

- **Support** - 1-Year HP Proactive BladeSystem Service
- **Deployment Service** - Enhanced Network Installation and Start-up for HP BladeSystem Switches

Deployment Services - HP Installation and Start Up services designed to take time, risk, and worry out of the deployment of HP BladeSystem servers - and free customers IT support staff to focus on what they do best, their business.

- Installation & Start-Up service for HP BladeSystem Infrastructure plus HP BladeSystem Enhanced Network Installation and Start-UP as per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

For a complete listing of service offerings and information visit:
http://www.hp.com/services/bladesystemservices
http://www.hp.com/go/proliant/carepack

NOTE: For Configure to Order requirements within EMEA region, please consult local Sales Contact.
NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.
NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.
NOTE: FIO indicates that this option only available as a Factory Installable Option.

Step 1: Base Storage Blade Configuration

Models	HP BLc SB40c CTO Storage Blade	434879-B21
	Configurable Model ships with:	
	HP Smart Array P400/256	
	Standard Power Supplies	
	Standard System Fans	
	6 hard drive bays	

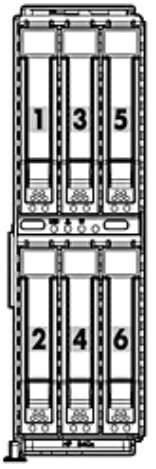
Step 2: Choose Required Options (at least one of the following from each list unless otherwise noted):

Hard Drives	**SFF Serial Attached SCSI (SAS) Hard Drives**	
	HP 72GB 3G SAS 15K SFF DP HDD	418371-B21
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 36GB 3G SAS 15K SFF DP HDD	418369-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 146GB 3G SAS 10K SFF DP HDD	418367-B21
	HP 146GB 3G SAS 10K SFF SP HDD	431958-B21
	HP 72GB 3G SAS 10K SFF DP HDD	384842-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	SFF Serial-ATA (SATA) Hard Drive	
	HP 60GB SFF SATA 5.4K HDD	379306-B21
	HP120GB SFF SATA 5.4K HDD	431786-B21
	NOTE: Up to 6 hard drives may be chosen. SAS drives are installed first then SATA drives. Smallest capacity drives are installed first. Matching drives are grouped together.	

Options

NOTE: Some of the options listed below may be discontinued.

c-Class Mezzanines	HP PCI Express Mezzanine pass-thru card for HP BladeSystem	431643-B21
	NOTE: Required to support the HP StorageWorks SB40c Storage Blade (P/N 411243-B21) with HP c-Class BladeSystem full-height server blades	
Hard Drives	**SFF Serial Attached SCSI (SAS) Hard Drives**	
	HP 72GB 3G SAS 15K SFF DP HDD	418371-B21
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 36GB 3G SAS 15K SFF DP HDD	418369-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 146GB 3G SAS 10K SFF DP HDD	418367-B21
	HP 146GB 3G SAS 10K SFF SP HDD	431958-B21
	HP 72GB 3G SAS 10K SFF DP HDD	384842-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	SFF Serial-ATA (SATA) Hard Drive	
	HP 60GB 1.5G SATA 5.4K SFF HDD	379306-B21
	HP120GB SFF SATA 5.4K HDD	431786-B21
	NOTE: Go to the HP Hard Drive Compatibility table for complete drive compatibility information (http://www.hp.com/products/harddiskdrives). Using hard drives in unsupported configurations will result in voiding the warranty and could result in damage to the drive and/or loss of data.	



1-6 6 x SFF SAS or SATA Hot Plug Hard Drives

Hard Drives

SFF Serial Attached SCSI (SAS) Hard Drives

	Quantity Supported	Position Supported	Controller
36GB 15,000 rpm SAS SFF 72GB 15,000 rpm SAS SFF S 36GB 10,000 rpm SAS SFF 72GB 10,000 rpm SAS SFF 146GB 10,000 rpm SAS	6	1-6	Smart Array P400 Controller

SFF Serial-ATA (SATA) Hard Drive

	Quantity Supported	Position Supported	Controller
120GB 5400rpm SATA 60GB 5,400 rpm SATA	6	1-6	Smart Array P400 Controller

Technical Specifications

HP StorageWorks SB40c storage blade	**Dimensions** (HxWxD)	2.19 x 7.154 x 20.058 in (5.56 x 18.17 x 50.95 cm)	
	Weight (unloaded)	8 lb (3.63 kg)	
	Weight (loaded)	11 lb (4.99 kg)	
	Protocol Support	3Gb/s SAS 1.5Gb/s SATA	
	O/S Support	Defined by specific HP array controller or SAS/SATA adapter used; please refer to the QuickSpecs and/or User Guide of the specific array controller or adapter	
	LED Indicators	UID	
		System Health LED	
	Drive LED Indicators (on drive trays)	Drive LED (top) - On-line/Activity	
		Drive Failure LED (bottom) - Drive Fault/Locate	
	Relative Humidity (non-condensing)	Operating	10% to 90%
		Shipping	5% to 95%
	Temperature Range	Operating	50° to 94° F (10° to 35° C°)
		Shipping	-22° to 140° F (-30° to 60° C)

NOTE: To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.

Smart Array P400 Controller	**Disk Drive and Enclosure Interface**	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR2-533MHz with provides up to 4.2 GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 256MB cache; ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical drives
	Maximum Logical Drive Capacity	876GB (6 x 146GB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6 with ADG (Advanced Data Guarding) RAID 5 (Distributed Data Guarding) RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.